

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL QA INSPECTION MANUAL

**QUALITY ASSURANCE GUIDELINES FOR
CONTRACTOR FURNISHED ELECTRICAL MATERIALS**

Issued by:
Division of Materials Engineering and Testing Services
Office of Testing and Technology Services
Electrical Testing Branch



(DISTRICTS 1-6, 9 and 10)

FORWARD

The Federal Highway Administration's (FHWA) Federal-Aid Policy Guide, Title 23 - The Code of Federal Regulations, requires that each State Highway Agency (SHA) develop a quality assurance program which will assure that the materials and workmanship incorporated into each Federal-aid highway construction project are in conformity with the requirements of the approved plans and specifications, including approved changes.

All references in this manual are to the July 1999 Caltrans Standard Specifications and Standard Plans.

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A. PURPOSE

It is the policy of the Department of Transportation to review, inspect, and test if needed, all electrical materials before their incorporation into Permit and State construction projects. Therefore, the purpose of these guidelines is to help clarify the roles and responsibilities of the various parties involved in an inspection and to document the procedures used. This manual may also be used by manufacturers, vendors and contractors as a resource to understanding the electrical quality assurance (QA) inspection and testing guidelines used by Caltrans.

The main function of the State's inspection and testing process is to provide quality assurance. Quality control (QC) is the responsibility of the Manufacturer. For most electrical materials, quality assurance will be performed at the Caltrans laboratory. In cases where this is not feasible, the materials will be inspected at a pre-arranged site determined by Caltrans.

It is not the intent of the State policy to relieve the Contractor of his responsibility for the materials used on the contract. Rather, it is the intent to avoid, so far as is economically feasible, time delays and extra costs that may occur if non-compliant electrical materials are delivered to the job site.

Lastly, it is emphasized that where discrepancies exist between these guidelines and the contract specifications, the specifications always take precedent.

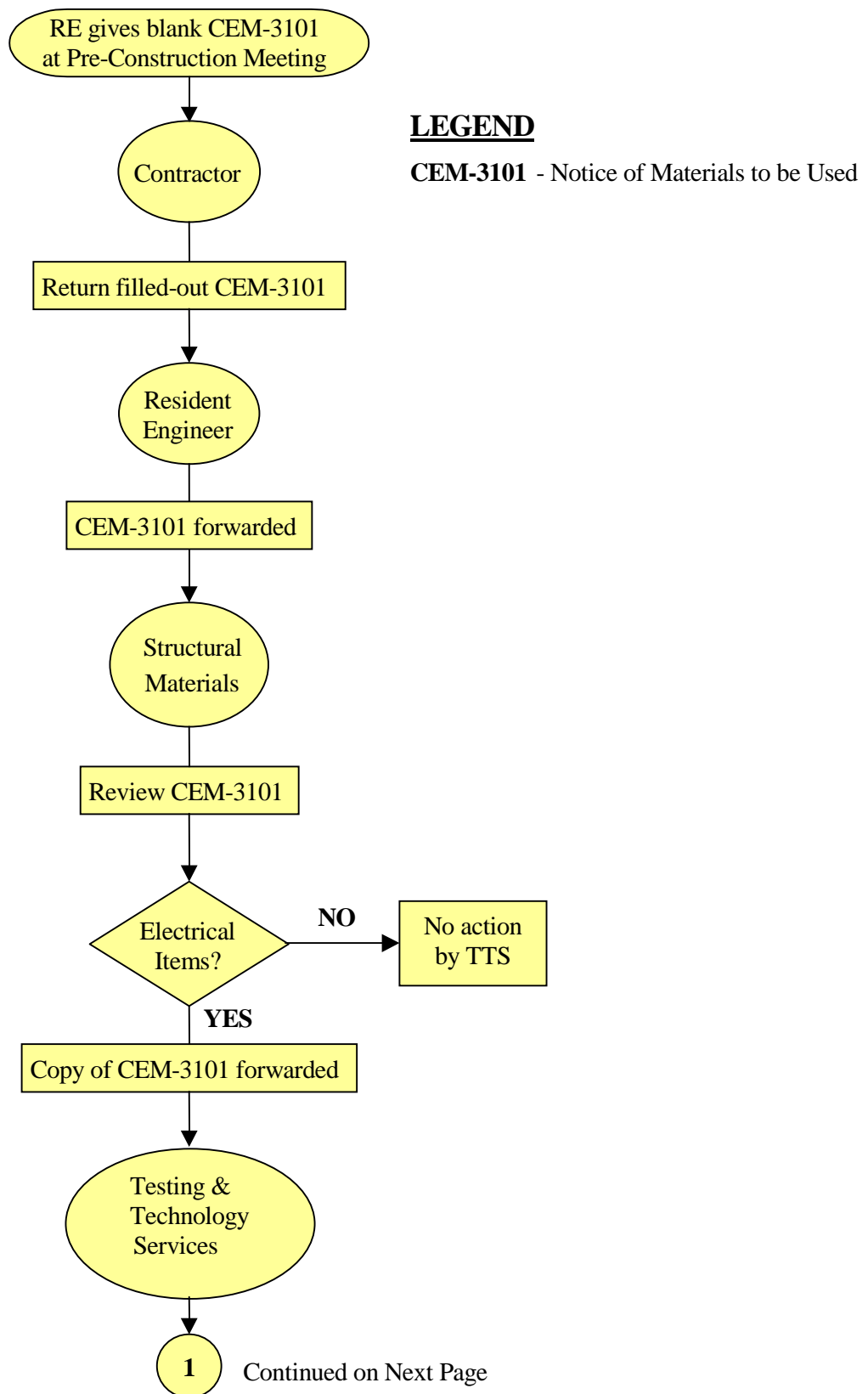
B. ADMINISTRATIVE PROCEDURE

The Division of Materials Engineering and Testing Services (METS) through its Office of Structural Materials (SM), and its Office of Testing and Technology Services (TTS), have been assigned primary responsibility to inspect and test Contractor furnished materials prior to incorporation into State construction projects.

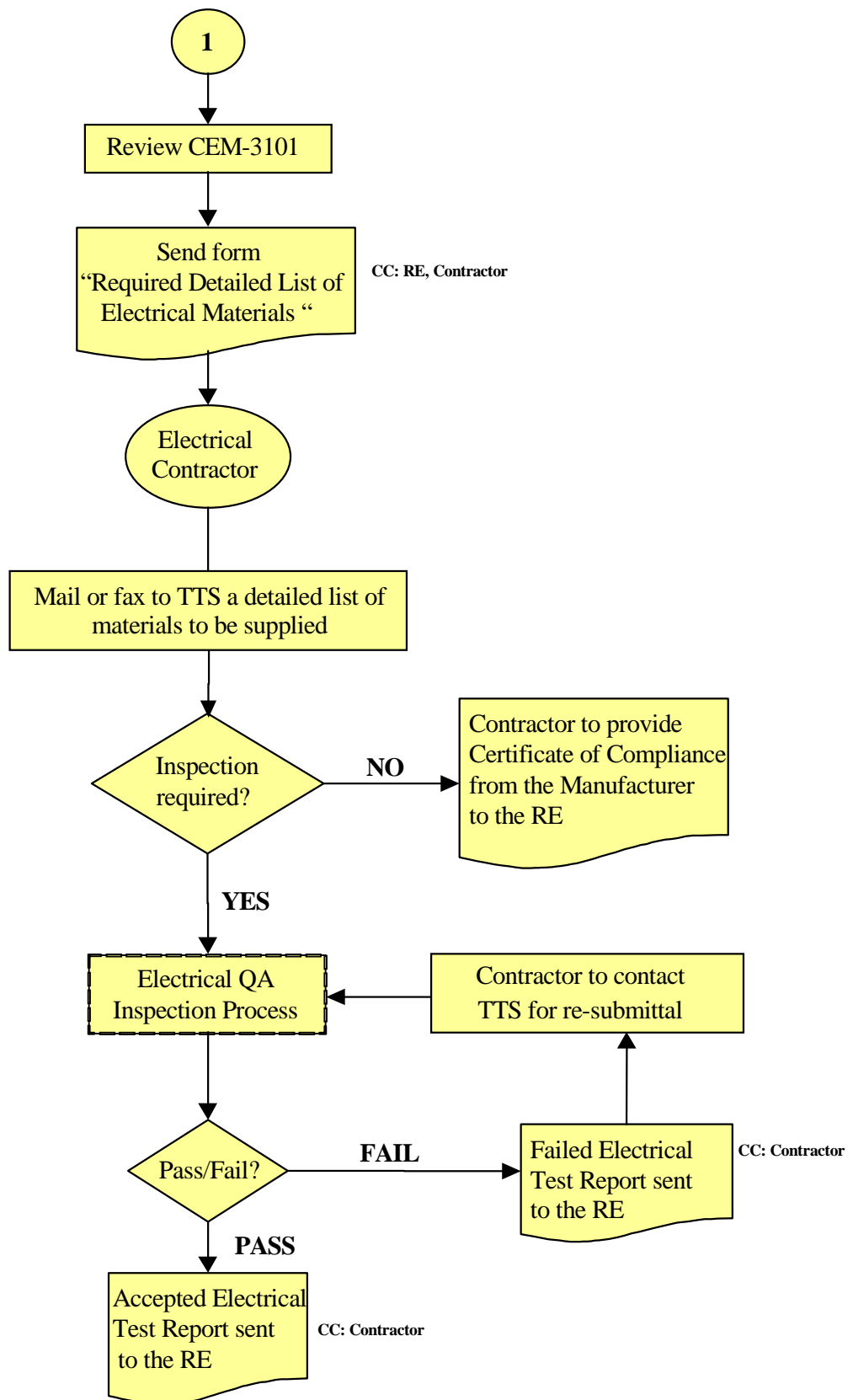
TTS is responsible for inspecting all electrical materials. SM is responsible for all other materials.

The point of contact to receive State Form CEM-3101, "Notice of Materials to be Used" (formerly known as HC-30) is SM. On a Caltrans contract, the Resident Engineer (RE) typically gives this blank form to the Contractor at the pre-construction meeting. The Contractor will then fill out this form and return it to the RE to forward to SM. When properly filled out, this form should provide the address, phone and fax number of the material's source.

Upon receipt of Form CEM-3101, SM will review the form to see if any electrical materials are to be used on the job. If electrical materials are encountered, then a copy of the CEM-3101 will be forwarded to TTS (See Figures 1 and 2 for a flow chart of the Electrical QA Inspection Process).



Electrical QA Inspection Process
Figure 1



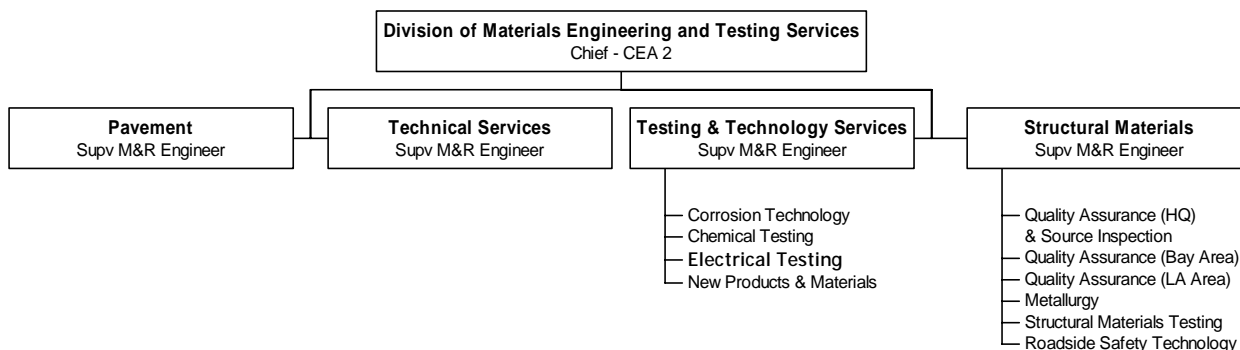
Electrical QA Inspection Process

Figure 2

C. GENERAL INFORMATION

Division of Materials Engineering and Testing Services (METS)

METS is located at 5900 Folsom Boulevard, Sacramento, CA 95819-4612. The Division is divided into eight operating services as shown in the following chart:



METS provides:

1. The methods, tests and processes necessary to select and evaluate materials used in all phases of highway construction and maintenance on California Highways.
2. Inspection, sampling, and testing of materials for compliance with contract requirements and coordination of these efforts throughout Caltrans.
3. Development of standards and specifications for the proper selection, sampling, and testing of materials.
4. Consultation with Caltrans Headquarters and District units on matters related to materials.
5. Material pre-qualification testing and new material evaluation.

D. ROLES AND RESPONSIBILITIES

The following outlines the roles and responsibilities of the various groups that may be involved in the Electrical QA inspection process.

D.1 RESIDENT ENGINEER

As soon as a contract has been approved, the RE is responsible for informing the Contractor in writing that the Standard Specifications require that the RE be furnished a list of the Contractor's source of materials. Form, CEM-3101, "Notice of Materials to be Used", is to be furnished to the Contractor as soon as possible, preferably at the pre-construction meeting.

Once this form is completed and returned by the Contractor, the RE should forward it to SM with sufficient lead-time to permit proper sampling, testing, and inspection of the materials furnished in advance of their use. It is very important that the RE makes sure that the Contractor supplies prompt and complete information including complete addresses of the suppliers. When available, the supplier's phone number and fax number should also be included.

In some instances when TTS is unable to inspect the materials, the inspection may be assigned back to the RE since it may be more convenient to make the inspection at the job site. In this event, the RE will be notified by the use of form TL-28, "Notice of Materials to be Inspected (by RE)" (see Appendix). The RE will then have the option to accept the material or to request assistance from TTS.

D.2 GENERAL CONTRACTOR

The General Contractor is ultimately responsible for making sure that all contractual agreements are met. This includes making sure that his subcontractors are adhering to the Contract Plans, Special Provisions, Standard Specifications and Plans.

The General Contractor may delegate the responsibility of filling out Form CEM-3101, but this does not relieve him/her of ultimately fulfilling the Standard Specification's requirement that the RE be furnished a list of the materials that will be supplied for the contract.

When an Electrical Subcontractor is not used on a construction project, the General Contractor shall adhere to the guidelines administered under section D.3, "Electrical Contractor".

D.3 ELECTRICAL CONTRACTOR

The Electrical Contractor, when directed by the General Contractor, will be responsible for filling out Form CEM-3101, "Notice of Materials to be Used"(see Appendix), which was supplied by the RE.

It is important that the Contractor supply complete material information including the complete addresses of the suppliers. When available, the supplier's phone number and fax number should also be included. This form is to be returned to the RE.

The Electrical Contractor may be notified via Form "Required Detailed List Of Electrical Materials"(see Appendix), that additional information will be required with regards to the electrical materials that are to be furnished. Typically this will require furnishing the quantity, model, make, and any other useful information. This information should be e-mailed, mailed or faxed to TTS in a timely manner. Upon review of this information, TTS will then notify the Electrical Contractor as to which materials will require inspection and which will be accepted on a Certificate of Compliance.

The Electrical Contractor shall then contact TTS to arrange for sampling, testing and inspection of the materials per section 6 and section 86-2.14 of the Standard Specifications. The Electrical Contractor shall also understand that the QA inspection does not relieve him of the full responsibility, for incorporating in the work, materials that comply with the Contract Plans and Specifications, nor does it preclude the subsequent rejection of materials found to be unsuitable.

When requested by TTS, the Electrical Contractor shall be responsible for obtaining a Certificate of Compliance from the manufacturer. This Certificate of Compliance shall be sent to the RE.

D.3.1 Initial and Subsequent TTS Testing

The Contractor shall notify TTS when the electrical materials are ready for inspection. The Contractor shall allow up to 30 calendar days for initial and subsequent testing in accordance with section 86-2.14 of the Standard Specifications. Short term Contracts and Permits will be dealt with on a case by case basis.

D.3.2 Approval/Disapproval

If the submitted materials are found to be compliant with the Contract Plans, Special Provisions, Standard Specifications and Plans and all other pertinent specifications, the material will be approved and noted as compliant on the Electrical Test Report (see section D.7). If the submitted materials are found to be non-compliant, then a failed Electrical Test Report will be generated (see section D.3.5 for re-testing).

D.3.3 Change in Specifications

Changes to the State Specifications will be treated as a new compliance review.

D.3.4 Changes to Submitted Materials

Any changes made by a Vendor or Manufacturer to a material or its components shall require proper documentation and notification. Any change whose results affect the attributes of the final material will be treated as a new submittal.

D.3.5 Request for Re-Testing

If, during the course of a contract, TTS finds that the Contractor's material does not meet the requirements of the Specifications, TTS will request re-testing of the material in accordance with section 86-2.14 of the Standard Specifications. With TTS approval, the Contractor may request to correct defective materials at METS Lab facility.

D.3.6 Shipping and Handling

All shipping, handling, insurance, and transportation costs incurred to carry out required QA testing shall be borne by the Contractor as stated in the Standard Specifications, section 86-2.14A.

D.4 OFFICE of STRUCTURAL MATERIALS (SM)

SM will receive form CEM-3101 from the RE. SM will review the form for any electrical materials that are to be used on the contract. If electrical materials are encountered, then a copy of the CEM-3101 will be forwarded to TTS, which will then be responsible for the inspection of these electrical materials (See Figure 1).

D.5 OFFICE of TESTING & TECHNOLOGY SERVICES (TTS)

TTS is responsible for the electrical QA inspections. Therefore, the information contained in these guidelines is chiefly concerned with the operation of TTS as it pertains to the Electrical QA Inspection Program.

The involvement of TTS will begin once it has been forwarded a copy of a CEM-3101 containing electrical materials. TTS will then notify the Contractor in writing that the material is subject to inspection and that a detailed list of materials will be required.

Once the Contractor submits a detailed list of materials to be supplied on the contract, TTS will be responsible for coordinating the sampling and electrical testing for the materials in question. TTS may then elect to: (1) Require the material to be sent to METS lab, (2) Send an Electrical Inspector to the source, (3) Accept the material on a Certificate of Compliance.

TTS will then inspect the material to insure that it is in compliance with the Contract Plans, Special Provisions, Standard Specifications and Plans. TTS will perform the inspection in a timely manner as specified in section 86-2.14 of the Standard Specifications, and consistent with the current workload.

In some instances, TTS may not be able to inspect the materials at METS lab and inspection may be assigned back to the RE. In this event, the RE will be notified by the use of form TL-28, "Notice of Materials to be Inspected" (see Appendix). The RE will then have the option to accept the material or request assistance from TTS.

D.6 MANUFACTURER/VENDOR/SUPPLIER

D.6.1 Quality Assurance at the Manufacturer's Facility

TTS may request to visit a manufacturer's facility. TTS may further elect to conduct an audit of the manufacturing process during the visit per section 6-1.06, "Plant Inspection" of the Standard Specifications.

D.6.2 Certificates of Compliance

A Certificate of Compliance shall be furnished prior to the use of any materials for which the Standard Specifications or the Special Provisions require a certificate be furnished. In addition, when so authorized in the Standard Specifications or Special Provisions, the Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance (section 6-1.07). Note that these materials may be sampled and tested at any time, and the State reserves the right to refuse to permit the use of material solely on the basis of a Certificate of Compliance.

Conduit is one of the materials that may be accepted on the basis of a Certificate of Compliance. Prior to shipping conduit to the job-site, a Certificate of Compliance shall be sent to the RE.

The Certificate of Compliance must be in a form acceptable to the RE and signed by a responsible officer of the company manufacturing the material. An example of an acceptable Certificate of Compliance is provided in the Appendix.

D.6.3 Manufacturing Documentation

Final material test procedures and test equipment used by the manufacturer shall be documented. Upon request, copies of this documentation shall be provided to TTS for review. This documentation shall include any schematics, plans, theory of operation and operational procedures.

D.6.4 Testability

Manufacturers are encouraged to design materials in a way that facilitates easy testing without proprietary equipment.

D.6.5 Design/Specification Changes

Manufacturers are encouraged to suggest specification and/or design changes that improve the quality of the material and/or lower its cost.

D.7 ELECTRICAL TEST REPORT PROCEDURES

D.7.1 Electrical Test Report Process

Findings by TTS shall be reported to the Contractor, Vendor and the RE in the form of an Electrical Test Report (see Appendix). In the case of a non-compliant item, the electrical test report will specify any deviations from the Contract Plans, Special Provisions, Standard Specifications and Plans.

D.7.2 Testing Criteria

All material reviewed will be tested and evaluated per the Contract Plans, Special Provisions, Standard Specifications and Plans.

D.7.3 Distribution

The electrical test report will be mailed or faxed to the Contractor and the RE within three working days from the completion of testing. When requested an original paper copy will be sent by regular mail.

D.7.4 Contact with TTS

The Contractor/Vendor/Manufacturer shall direct all information and/or inquiries that involve testing, testing results, quality assurance inspection and defective electrical materials to TTS.

D.8 MATERIAL SUBMITTAL GUIDELINES

D.8.1 Shipments to TTS

When requested by TTS, shipments shall be made based on the following guidelines:

- a. Sample quantities will be determined using “MIL STD 105 Normal Sampling Plan” (see Appendix).
- b. All materials are to be new. Used, shopworn, demonstration units, prototype or discontinued models are not acceptable.
- c. Materials shall not be shipped until the delivery has been coordinated with TTS.
- d. A 48-hour advance notice of shipping of materials to TTS is required.

D.8.2 Disposition of Tested Materials

Materials will be returned as specified in section 86-2.14 of the Standard Specifications.

D.8.3 Shipment Labeling

Shipment labels shall appear on all outer boxes. Shipment labels shall contain the following information:

- a. Contractor name and phone number
- b. State Contract number
- c. Vendor name and phone number
- d. Material description
- e. Quantity in box
- f. Outer boxes shall be plainly marked:
 "ATTN: ELECTRICAL TESTING, MS-5"
 5900 FOLSOM BLVD, SACRAMENTO, CA 95819-4612

D.8.4 Serial Number List

If applicable, each box shall contain a listing of materials serial numbers contained within the box. If all serial numbers of materials included within the box are consecutive, a range of serial numbers may be provided.

E. GENERAL INSPECTION GUIDELINES

E.1 ELECTRICAL QA INSPECTOR'S RESPONSIBILITIES AND AUTHORITY

The Electrical QA Inspector should bear in mind that the main reason for inspecting is quality assurance. Inspection is not intended to provide quality control of the material. Quality control is the responsibility of the Manufacturer.

The Electrical QA Inspector will be responsible for the inspection of electrical material for compliance with the Contract Plans, Special Provisions, Standard Specifications and Plans. The Electrical QA Inspector is authorized to reject such material that does not comply and to approve such material that does comply. Approved material that later proves defective or unsuitable for the work can be rejected by the State prior to installation. It is critical that the Electrical QA Inspectors insure that the Contract Plans, Special Provisions, Standard Specifications and Plans are fully met before approving the shipment of any material, except as provided below.

While it is the policy of the Department of Transportation to avoid unnecessary delays to the Contractor, the Electrical QA Inspector should not accept material unless the material complies with specifications. Test data submitted by the manufacturer should be properly identified with the material and checked for compliance. All required testing should be completed before acceptance. All inspections must be conducted in a timely manner to avoid construction delays. Every effort should be made to eliminate legitimate complaints that inspections have delayed the schedule of the Contractor's work.

The Electrical QA Inspector should not accept deviations from specifications or changes in plan details without proper authorization received from the head of TTS. Authorization for deviations will generally be confirmed by a copy of an approved change order or written authorization from the RE. Assurances from a fabricator, verbal instructions from a designer etc. are not acceptable authority unless confirmed through the Electrical QA Inspector's supervisor. In emergency situations, action may be taken by a call from a Resident Engineer. Confirmation by change order or letter should normally follow.

When in doubt, abide by the Contract Plans, Special Provisions, Standard Specifications and Plans. In case of doubt as to interpretation, get advice from your supervisor. All such verbal communications must be documented.

The Electrical QA Inspector should bear in mind when using these guidelines that specifications are continually being changed and modified as the need arises. Therefore, specific references to certain numbered specifications or test methods found in this manual should always be verified by referring to current job specifications and special provisions, which will always supersede any references in these inspection guidelines.

E.2 PERSONAL KNOWLEDGE

In order to develop the respect and confidence of others, the Electrical QA Inspector should have a thorough knowledge of the work and materials under consideration. Difficult and unusual problems encountered during the progress of the inspection should be referred to the supervisor for advice. Proprietary information gained by an Electrical QA Inspector must not be divulged to others.

E.3 TEST SAMPLES

Test samples of materials intended for use on state projects must be taken by, or under the direct supervision of a State representative, unless otherwise specifically authorized by TTS.

This is a policy that must be applied uniformly to all vendors and manufacturers. Similarly, the acquisition of materials for sampling must be under the control of the State Electrical QA Inspector and must not be left to the Vendor or Manufacturer.

Sample quantities will be determined using “MIL STD 105 Normal Sampling Plan by Attribute” (see Appendix).

E.4 SAFETY REGULATIONS

Electrical QA inspection activities should adhere to the regulations of the location in which the work is being done. Safety and security rules issued for the vendor's or manufacturer's personnel apply equally to employees and agents of others engaged in the work. Special safety equipment when required will be furnished by the Department to the Electrical QA Inspector. Prescription and non-prescription safety glasses are available at no cost to the state employee. Complete understanding and careful practice of existing safety rules and regulations should be adhered to at all times. Be alert both for your own safety as well as the safety of others around you.

E.5 PUBLIC CONVERSATION

Conversation affecting the work should always be maintained on a friendly but discrete basis. The requirements of the Department of Transportation must be thoroughly but concisely explained. Electrical QA Inspectors will interact with many manufacturers and vendors, and have access to information regarding production processes, some of which may be considered confidential and proprietary. Therefore, Electrical QA Inspectors must never divulge one plant's production processes to another.

E.6 SUBSTITUTED MATERIALS

Where specifications indicate that "or equal" materials may be used, the burden of proof as to equality will remain with the Contractor. Substitute materials will not be considered unless accompanied by the manufacturer's written guarantee of compliance and complete test reports. Suggested tests to prove equality should be obtained from the manufacturer by the Contractor and approval obtained concerning proof tests in advance from TTS. Additional proof may be required over that offered by the vendor or manufacturer.

E.7 BORDERLINE MATERIALS

The acceptance or rejection of borderline material is a subject requiring the highest degree of judgement on the part of the Electrical QA Inspector. Therefore, they must carefully consider their recommendation to the RE. In cases of doubt, the Electrical QA Inspector should refer the matter to their supervisor.

E.8 UNUSUAL SITUATIONS

Situations involving unusual or doubtful conditions of a serious nature shall be discussed with the supervisor before any final action is taken. The Electrical QA Inspector should avoid public discussion of such problems and should not proceed with inspection until authorization is received from the Electrical QA Inspector's supervisor.

E.9 REPORTING REJECTIONS

Rejection of any material will be reported to the Contractor, Vendor and the RE. This is especially important in case of later discussions with the Vendor/Manufacturer and sets up a valuable case history concerning the material involved. The Electrical QA Inspector will document all reasons for rejection in the electrical test report.

E.10 TIMELY CORRECTION OF ERRORS AND MISTAKES

At times, errors or mistakes may be made. Experience has shown that when a good relationship exists between industry and the state representative, a satisfactory rectification can be more easily achieved.

It is the duty of the Electrical QA Inspector to inform the Contractor of any deviation from specifications or plans as soon as the error is discovered. It cannot be overemphasized that prompt action, as early as possible, will save money for both the State, Vendor, Manufacturer and Contractor.

E.11 REPORTS

In general, each Electrical QA Inspector will prepare an electrical test report. In addition, certain special reports of investigations and rejections may be necessary. All reports must be concise, complete, and submitted on a timely basis to the Contractor, Vendor and the RE. Late submission of reports must be avoided. The Electrical QA Inspector must recognize that proper documentation is one of the most important functions in the overall inspection process.

E.12 MARKINGS

The first order of business when inspecting materials is to verify that they are properly marked and identified in accordance with the reference specification. If materials are not properly marked, they will not be accepted.

E.13 MANUFACTURER'S QUALITY CONTROL

The Electrical QA Inspector must understand the difference between quality control and quality assurance. The manufacturer or fabricator should exercise sufficient quality control on their material to insure compliance with all the requirements of the specifications. This shall be a continual effort on the part of the manufacturer and is considered to be synonymous with the manufacturing or fabrication process. Quality assurance is the responsibility of the Electrical QA Inspector.

F. ELECTRICAL MATERIALS REQUIRING INSPECTION

Electrical QA inspection and testing procedures will be dependant on the Caltrans Contract Plans, Special Provisions, Standard Specifications and Plans. Final testing and evaluation will require most samples to be tested and evaluated at Mets Lab.

GENERAL GUIDELINE

1. As so far as practicable, make a general check of the type, operational characteristics, design etc. for compliance with the Special Provision requirements.
2. Check material for damage and obvious defects.

F.1 STANDARDS-STEEL PEDESTALS -POSTS SPECIFICATIONS

(Inspected by Structural Materials. Contact Structural Materials at (916) 227-7263 for details.)

F.2 TRAFFIC SIGNAL AND LIGHTING STANDARD

(Inspected by Structural Materials. Contact Structural Materials at (916) 227-7263 for details.)

F.3 ELECTRICAL CONDUIT

F.3.1 Specifications

- a. Standard Specifications, section 86-2.05
- b. Contract Plans and Special Provisions
 1. Type 1, rigid steel conduit UL Publication 6
 2. Type 2, rigid steel conduit conforms to Type-1 with 0.9-mm polyvinyl chloride or polyethylene exterior coating
 3. Type 3, rigid non-metal conduit conforms to UL-Publication 651
 4. Type 4, liquid tight flexible metal conduit shall be listed by UL suitable for use as the grounding conductor
 5. Type 5, Intermediate steel conduit (IMC) shall conform to UL Publication 1242

F.3.2 Frequency of Sampling and Testing

- a. Accept on a Certificate of Compliance (Standard Specifications, section 6-1.07)
- b. Periodic sample required as directed by TTS

F.3.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-2.05

F.3.4 Marking Requirement

UL label

F.3.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.3.6 Remarks

Certificate of Compliance shall indicate quantity of each size and type of conduit (Type 1, 2, 3, 4 or 5)

F.4 PULL BOXES

F.4.1 Specifications

- a. Standard Specifications, sections 86-2.06 and 86-2.07
- b. Standard Plans, ES-8, ES-9B, ES-9C, ES-9D and ES-9E
- c. Contract Plans and Special Provisions

F.4.2 Frequency of Sampling and Testing

As required by TTS

F.4.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07, 86-2.06 and 86-2.07

F.4.4 Marking Requirements

- a. Standard Specifications, section 86-2.06B "Cover Markings"
- b. Contract Plans and Special Provisions

F.4.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.4.6 Remarks

Check the following:

- a. Contract Plans and Special Provisions
- b. Material (metal, portland cement concrete or non-PCC material)
- c. Required cover marking (Standard Specifications, section 86-2.06B)
- d. Pull box dimensions (Standard Plans, ES-8, ES-9B, ES-9C, ES-9D and ES-9E)

F.5 CONDUCTORS AND SIGNAL CABLE

F.5.1 Specifications

- a. Standard Specifications, section 86-2.08
- b. California Test Method 635
- c. American Wire Gage (AWG)
- d. ASTM designation B3 and B-8 (Copper Wire)
- e. Contract Plans and Special Provisions
- f. Standard Specifications, section 86-5.01A(4)
- g. Loop detector cable see ASTM B-286 Table -1

F.5.2 Frequency of Sampling and Testing

- a. Accept on Certificate of Compliance
- b. As required by TTS

F.5.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-2.08

F.5.4 Marking Requirements

Standard Specifications, section 86-2.08A

F.5.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.5.6 Remarks

Check the following:

- a. Check Contract Plans and Special Provisions for type of conductor or cable required
- b. Check conductors and cables for identification, section 86-2.08A
- c. Series circuit conductors see Standard Specifications, section 86-2.08C
- d. Signal cable, Standard Specifications, section 86-2.08D

- e. Multiple circuit conductors, Standard Specifications, section 86-2.08B, (Type TW, THW, USE, RHH or RHW)

F.6 BONDING AND GROUNDING

F.6.1 Specification

- a. Standard Specifications, section 86-2.10
- b. Contract Plans and Special Provisions

F.6.2 Frequency of Sampling and Testing

None required

F.6.3 Manufacturer's Test Reports and/or Certifications

None Required

F.6.4 Marking Requirements

None Required

F.6.5 Method of Notification

None Required

F.6.6 Remarks

Check the Contract Plans and Special Provisions for special bonding and grounding of equipment requirements

F.7 SERVICE EQUIPMENT ENCLOSURE

F.7.1 Specifications

- a. Standard Specifications, section 86-2.11
- b. Contract Plans and Special Provisions
- c. Requirements of the serving utility
- d. Standard Plans, ES-2A, ES-2B, ES-2C, ES-2D, ES-2E and ES-2F

F.7.2 Frequency of Sampling and Testing

- a. 100% testing for compliance
- b. Any modification or design change
- c. Check sample shall be one of each type

F.7.3 Manufacturer's Test Reports and/or Certifications

- a. Utility approval (see note 1 on ES-2B and ES-2C)
- b. A Certificate of Compliance, certifying the coating system complies with Standard Specifications, section 86-2.16 "Painting", (periodic paint samples shall be taken for California Test Method 645 on 100 mm x 200 mm x 0.6 mm test specimens)

F.7.4 Marking Requirements

Standard Plans (note 6 and 7 on ES-2B and note 12 and 13 on ES-2C)

F.7.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.7.6 Remarks

Check Contract Plans and Special Provisions for the following:

- a. Type of service enclosure (Type SCE-I, SCE-II, Type IIA, Type IIB, Type III-AF, Type III-BF, Type III-CF or pole-mounted service installations)
- b. Cabinet material
- c. Metered or unmetered
- d. Circuit breakers (single pole, double pole and operating voltage)
- e. Check for phenolic engraved nameplates indicating functions and cabinet location
- f. Type of photoelectric control (Type I-V)
- g. Enclosure must meet the requirements of the Standard Specifications, section 86-2.16

F.8 WOOD POLES

(Inspected by Structural Materials. Contact Structural Materials at (916) 227-7263 for details.)

F.9 SIGN CONTROL

F.9.1 Specifications

- a. Standard Specifications, section 86-2.13
- b. Contract Plans and Special Provisions
- c. Standard Plan, ES-15D

F.9.2 Frequency of Sampling and Testing

As required by TTS

F.9.3 Manufacturer's Test Reports and/or Certifications

As required by the Contract Plans, Special Provisions, Standard Specifications and Plans

F.9.4 Marking Requirements

As required by the Contract Plans, Special Provisions, Standard Specifications and Plans

F.9.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.9.6 Remarks

- a. Check plans and SSPs for type of sign control (SC-1, SC-2, SC-3, SC-4 and SC-5)
- b. NEMA Type 3R enclosure required for sign control
- c. Enclosure shall be galvanized or cadmium plated
- d. When the sign structure is to be painted, the enclosure shall be painted the same color
- e. Circuit breakers shall meet the requirements of the Standard Specifications, section 86-2.11

F.10 FLASHING BEACON CONTROL ASSEMBLY (FBCA)

F.10.1 Specifications

- a. Standard Specifications, section 86-4.09
- b. Standard Plans, ES-3B, ES-7K and ES-7L
- c. Contract Plans and Special Provisions

F.10.2 Frequency of Sampling and Testing

As required by TTS

F.10.3 Manufacturer's Test Reports and/or Certifications

As required by TTS

F.10.4 Marking Requirements

Schematic wiring diagram of control unit

F.10.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.10.6 Remarks

Check Special Provisions for the following:

- a. Type of flasher control unit (one-or-two circuit)
- b. Dimming circuit requirements
- c. Switching to dimming circuit by photoelectric control or time switch
- d. Type of sign lighting fixture (fluorescent, incandescent)
- e. Enclosure NEMA-3R (painted or galvanized)

F.11 GALVANIZING

(Inspected by Structural Materials. Contact Structural Materials at (916) 227-7263 for details.)

F.12 PAINTING

(Inspected by Chemical Testing. Contact Chemical Testing at (916) 227-7289 for details.)

F.13 CONTROLLER ASSEMBLIES

F.13.1 Specifications

- a. Standard Specifications, section 86-3.01
- b. Contract Plans and Special Provisions
- c. TEES Standards for Traffic Control Systems and applicable addendum's
- d. Traffic Signal Control Equipment Specifications (TSCES)

F.13.2 Frequency of Sampling and Testing

- a. Standard Specifications, sections 6-1.07 and 86-3
- b. As required by TTS
- c. Determined by problems of the individual manufacturers and the Qualified Products List (QPL)

F.13.3 Manufacturer's Test Reports and/or Certifications

- a. Suppliers of controller assembly equipment must be QPL approved
- b. A Certificate of Compliance with the approved procedure and a test report signed by a responsible managing officer shall accompany each controller assembly

F.13.4 Marking Requirements

- a. Contract Special Provisions
- b. Standard Specifications, section 86-3.05A

F.13.5 Method of Notification

- a. Each controller cabinet with a listing of supplied components
- b. Electrical Test Report

F.13.6 Remarks

Controller assemblies are normally State Furnished Items or can be purchased from Caltrans. Contact TTS for details

F.14 VEHICLE SIGNAL FACES

F.14.1 Specifications

- a. Standard Specifications, section 86-4
- b. Metal signal sections shall meet the requirements of California Test Method 666
- c. Plastic signal sections shall meet the requirements of California Test Method 605
- d. Institute of Transportation Engineers (ITE) Publication ST-017A, Equipment and Material Standards
- e. Standard Plans, ES-4A, ES-4B, ES-4C, ES-4D and ES-4E

F.14.2 Frequency of Sampling and Testing

As required by TTS

F.14.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-4

F.14.4 Marking Requirements

As required by Contract Plans, Special Provisions, Standard Specifications and Plans

F.14.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.14.6 Remarks

Check the following:

- a. Painting process, Standard Specifications, section 86-2.16
- b. Glass lens only, Standard Specifications, section 86-4.01A
- c. Exposed hardware of Type 304 or 305 stainless steel (hinge pins and door latches)
- d. All interior screws and fittings shall be stainless steel or steel with a corrosion resistant plating or coating
- e. Signal mounting assemblies as called for on Contract Plans
- f. 40mm standard weight galvanized steel pipe required for signal mounting assemblies

F.15 PROGRAMMED VISIBILITY VEHICLE SIGNAL FACES

F.15.1 Specifications

- a. Standard Specifications, section 86-4.05
- b. Contract Plans and Specifications

F.15.2 Frequency of Sampling and Testing

As required by TTS

F.15.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-4.05

F.15.4 Marking Requirements

As required by the Contract Plans, Special Provisions, Standard Specifications and Plans

F.15.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.15.6 Remarks

Check the following:

- a. Painting process, Standard Specifications, section 86-2.16
- b. Mounting assemblies
- c. Exterior hardware, Standard Specifications, section 86-4.01B
- d. Interior hardware, Standard Specifications, section 86-4.01B
- e. Contract Plans and Special Provisions

F.16 PEDESTRIAN SIGNAL FACES

F.16.1 Specifications

- a. Standard Specifications, sections 86-4.06 and 86-4.07
- b. Standard Plan, ES-4B
- c. Contract Plans and Specifications
- d. ITE publication ST-017A and California Test Method 606

F.16.2 Frequency of Sampling and Testing

As required by TTS

F.16.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-4.06

F.16.4 Marking Requirements

As required by the Contract Plans, Special Provisions, Standard Specifications and Plans

F.16.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.16.6 Remarks

Check the following:

- a. Paint process, Standard Specifications, section 86-2.16
- b. Exterior hardware, Standard Specifications, section 86-4.01B
- c. Interior hardware, Standard Specifications, section 86-4.01B
- d. Contract Plans and Special Provisions for mounting assemblies and type of pedestrian signal face (Type-A, Type-B or Type-C)

F.17 FLASHING BEACON SIGNAL FACES

F.17.1 Specification

- a. Standard Specifications, section 86-4.09
- b. Contract Plans and Special Provisions
- c. Standard Plans, ES-7K and ES-7L

F.17.2 Frequency of Sampling and Testing

As required by TTS

F.17.3 Manufacturer's Test Reports and/or Certification

Standard Specifications, sections 6-1.07 and 86-4.09

F.17.4 Marking Requirements

As required by the Contract Plans, Special Provisions, Standard Specifications and Plans

F.17.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.17.6 Remarks

Check the following:

- a. Paint process, Standard Specifications, section 86-2.16
- b. Exterior hardware. Standard Specifications, section 86-4.01B
- c. Interior hardware, Standard Specifications, section 86-4.01B
- d. Lens (glass only)
- e. Contract Plans and Special Provisions for mounting assembly and lens color (red or amber) also signal head size (200mm or 300mm)

F.18 VEHICLE DETECTORS

F.18.1 Specifications

- a. Standard Specifications, section 86-5.01
- b. Traffic Signal Control Equipment Specifications (TSCES)
- c. Standard Plans, ES-5A, ES-5B, ES-5C, ES-5D and ES-5E

F.18.2 Frequency of Sampling and Testing

As required by TTS

F.18.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-5.01

F.18.4 Marking Requirements

As required by TSCES

F.18.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.18.6 Remarks

- a. Check QPL and Contract Special Provisions requirements prior to release of detector equipment
- b. Usually a State furnished item

F.19 PEDESTRIAN PUSH BUTTON ASSEMBLIES

F.19.1 Specifications

- a. Standard Specifications, section 86-5.02
- b. Standard Plan, ES-5C
- c. Contract Plans and Specifications

F.19.2 Frequency of Sampling and Testing

As required by TTS

F.19.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-5.02

F.19.4 Marking Requirements

As required by the Contract Plans, Special Provisions, Standard Specifications and Plans

F.19.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.19.6 Remarks

- a. Check painting process, Standard Specifications, section 86-2.16
- b. Check Contract Special Provisions and Plans for push button type A, B or C, also pedestrian push button sign requirements

F.20 LIGHTING

F.20.1 Specifications

- a. Standard Specifications, section 86-6, and Standard Plan, ES-10
- b. Contract Plans and Special Provisions
- c. High pressure sodium luminaires, section 86-6.01 and Standard Plan, ES-10
- d. Low pressure sodium luminaires, section 86-6.02 (Contract Plans and Special Provisions)

- e. Mercury vapor luminaires (Contract Special Provisions)
- f. 6.6 ampere series lighting, section 86-6.09
- g. Soffit luminaires, section 86-6.03 and Standard Plans, ES-9E, ES-9F and ES-10
- h. Wall luminaires, section 86-6.03 and Standard Plan, ES-10
- i. Pedestrian crossing fixtures, section 86-6.04 and Standard Plans, ES-12A and ES-12B
- j. High mast lighting, Contract Plans, Special Provisions and Standard Plan, ES-6J
- k. Transformers, section 86-6.09
- l. Sign lighting fixtures: 1) Mercury, section 86-6.05 and Standard Plan, ES-15A, 2) Incandescent, section 86-6.06 and Standard Plan, ES-7L, 3) Fluorescent, Standard Plan, ES-15B
- m. Internally illuminated street name sign, section 86-6.065, and Standard Plan, ES-7O
- n. Photoelectric controls, section 86-6.07, and Standard Plans, ES-7N and ES-14B

F.20.2 Frequency of Sampling and Testing

As required by TTS

F.20.3 Manufacturer's Test Reports and/or Certifications

- a. Certificate of Compliance conforming to section 6-1.07 for each lot of integral ballast luminaires and external ballast luminaires, Standard Specifications, section 86-6.01A
- b. Manufacturer shall furnish a certificate of cyclic loading for all luminaires to be mounted on horizontal mast arms (California Test Method 611)

F.20.4 Marking Requirements

- a. Manufacturers name
- b. Catalog number
- c. Type (high-pressure sodium, mercury vapor, fluorescent, incandescent, etc.)
- d. Type of ballast (regulator lead type, lag type regulator, etc.)
- e. Luminaire wattage

F.20.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.20.6 Remarks

- a. Check Contract Plans and Special Provisions for type and number of lighting materials required
- b. Luminaires, check for: 1) wattage (200, 310, etc.) 2) Voltage (120, 240, or 480), 3) Type of ballast
- c. Sign lighting fixtures, check for: 1) fixture wattage, 2) voltage (120, 240, or 480), 3) catalog number, 4) type of fixture ballast
- d. Photoelectric control units, Contract Plans and Special Provisions

F.21 IRRIGATION CONTROLLERS

F21.1 Specifications

- a. Standard Specifications, sections 20-2.31A, 20-5.027G and 86-1.02
- b. Contract Plans and Special Provisions
- c. Standard Plans, ES-3H

F21.2 Frequency of Sampling and Testing

As required by TTS

F21.3 Manufacturer's Test Reports and/or Certification

- a. Metal enclosures shall comply with Standard Specifications, sections 6-1.07 and 86-2.16
- b. Fiberglass enclosure minimum 12,000 psi flexile strength and 8,000 psi tensile strength

F21.4 Marking Requirement

Manufacturers name or symbol on each enclosure

F21.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F21.6 Remarks

Check for the following:

- a. Color of enclosure (see Contract Special Provisions)
- b. Door locks for enclosure (see Contract Special Provisions)
- c. Type of enclosure metal or fiberglass

F.22 ELECTRIC REMOTE IRRIGATION VALVES

F.22.1 Specifications

- a. Standard Specifications, sections 20-2.31E and 20-2.23
- b. Contract Plans and Special Provisions

F.22.2 Frequency of Sampling and Testing

As required by TTS

F.22.3 Manufacturer's Test Reports and/or Certification

As required by the Contract Plans, Special Provisions, Standard Specifications and Plans

F.22.4 Marking Requirements

Size of valve

F.22.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.22.6 Remarks

Check the following:

- a. Type of material called for in the Special Provisions (brass, bronze, PVC, or cast iron)
- b. Check Special Provisions to see if valves and irrigation controller are to be of the same manufacturer. PVC valves, check Special Provisions to see type of seat required

F.23 EXTINGUISHABLE MESSAGE SIGNS (EMS)

F.23.1 Specifications

- a. Contract Special Provisions
- b. Contract Plans
- c. Standard Plans, ES-14A, ES-14B and ES-14C

F.23.2 Frequency of Sampling and Testing

As required by the Contract Special Provision

F.23.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-2.04

F.23.4 Marking Requirements

As required by the Contract Plans, Special Provisions, Standard Specifications and Plans

F.23.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.23.6 Remarks

Test the sampled EMS sign per Special Provisions

F.24 LIGHT EMITTING DIODE (LED) TRAFFIC SIGNAL MODUALS

F.24.1 Specifications

Standard Specifications, section 86-4

F.24.2 Frequency of Sampling and Testing

As required by the Contract Special Provisions

F.24.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07, 86-4.02 and 86-4.07

F.24.4 Marking Requirements

Standard Special Provisions, page 86-38.5_M and page 86-38.6_M

F.24.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.24.6 Remarks

Use MIL STD Specifications and sample as per MIL STD 105

F.25 CLOSED CIRCUIT TELEVISION (CCTV)

F.25.1 Specifications

- a. Contract Special Provisions
- b. Standard Plans, ES-16A, ES-16B and ES-16C

F.25.2 Frequency of Sampling and Testing

As required by the Contract Special Provisions

F.25.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, section 6-1.07

F.25.4 Marking Requirements

As required by the Contract Special Provisions

F.25.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.25.6 Remarks

Check for the following:

- a. Check the brand type specified in the Special Provisions
- b. Test CCTV materials as per the Special Provisions and Specifications

F.26 CHANGEABLE MESSAGE SIGNS (CMS)

(Note: Tubular Sign Structure to be inspected by Structural Materials. Contact Structural Materials at (916) 227-7263 for details.)

F.26.1 Specifications

- a. TEES, November 19, 1999
- b. TEES, Chapter 8, July 1996
- c. CMS Specification Addendum to TEES Chapter 8, November 1998
- d. TSCES, January 1989

F.26.2 Frequency of Sampling and Testing

As required by the Contract Special Provisions

F.26.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, section 6-1.07

F.26.4 Marking Requirements

As required by CMS Specifications and TEES

F.26.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.26.6 Remarks

CMS are usually state-furnished items. If not, check the following:

- a. Welding
- b. Paint
- c. SignView
- d. Test as per CMS Specifications (TEES, chapter 8, November 1998)

F.27 TELEPHONE DEMARCATION CABINETS (TDC)

F.27.1 Specifications

- a. Standard Plans, ES-3D, ES-3E, ES-3F and ES-3G
- b. Contract Plans and Specifications

F.27.2 Frequency of Sampling and Testing

As required by TTS

F.27.3 Manufacturer's Test Reports and/or Certifications

Standard Specifications, sections 6-1.07 and 86-2.04

F.27.4 Marking Requirements

As required by the Contract Special Provisions

F.27.5 Method of Notification

Electrical Test Report or Certificate of Compliance Request

F.27.6 Remarks

Check the Following:

- a. Welding
- b. Cabinet material
- c. Paint
- d. Type of cabinet (Type A, B or C)

F.28 SPECIALTY ITEMS

(Contact TTS for items not addressed in these guidelines)

APPENDIX

GLOSSARY

ASTM	American Society for Testing and Materials
AWG	American Wire Gauge
AWS	American Welding Society
CCTV	Closed Circuit Television
CEM-3101	Notice of Materials to be Used (Formerly HC-30)
CMS	Changeable Message Sign
EMS	Extinguishable Message Signs
FBCA	Flashing Beacon Control Assembly
FHWA	Federal Highway Administration
IMC	Intermediate Metallic Conduit
ITE	Institute of Transportation Engineers
LED	Light Emitting Diode
METS	Division of Materials Engineering and Testing Services
MIL STD	Military Standard
MS	Mail Stop
NEMA	National Electrical Manufacturers Association
SM	Office of Structural Materials
TTS	Office of Testing and Technology Services
PCC	Portland Cement Concrete
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
QPL	Qualified Products List
RE	Resident Engineer
SHA	State Highway Agency
SSP	Standard Special Provisions
TDC	Telephone Demarcation Cabinet
TEES	Transportation Electrical Equipment Specifications
TL-28	Notice of Materials to be Inspected
TSCES	Traffic Signal Control Equipment Specifications
UL	Underwriters Laboratories

QA Testing Sampling Plan

Normal Sampling Plan (MIL STD 105)

Table for Inspection by Attributes

<u>Description</u>	Contract Quantity	Testing Sample Size	<u>Critical</u>		
			Aql	Acc	Rej
All Electrical Materials	1 - 8	1	10	0	1
	9 - 15	2	10	1	2
	16 - 25	3	10	1	2
	26 - 50	5	10	1	2
	51 - 90	5	10	1	2
	91 - 150	8	10	2	3
	151 - 280	13	10	3	4
	281 - 500	20	10	5	6
	501 - 1200	32	10	7	8

Notes: **General Inspection I**
Aql = Acceptable Quality Level
Acc = Acceptance Numbers
Rej = Rejection Numbers

DEPARTMENT OF TRANSPORTATION

NOTICE OF ELECTRICAL MATERIALS TO BE INSPECTED (by RE)

To RE:	Date: <hr/> From: State of California Department of Transportation Division of METS Office of Testing & Technology Services Electrical Testing Branch 5900 Folsom Blvd Sacramento, CA 95819-4612							
<table style="width:100%; border: none;"> <tr> <td align="center" style="width:25%;">District</td> <td align="center" style="width:25%;">County</td> <td align="center" style="width:25%;">Route</td> <td align="center" style="width:25%;">PM</td> </tr> </table>		District	County	Route	PM			
District	County	Route	PM					
On State Contract:								
<table style="width:100%; border: none;"> <tr> <th align="left" style="width:10%;">Contract item#</th> <th align="left" style="width:10%;">Qty</th> <th align="left" style="width:15%;">Manufacturer</th> <th align="left" style="width:30%;">Brief Description</th> <th align="left" style="width:15%;">Model</th> <th align="left" style="width:20%;">Serial# (if any)</th> <th align="left" style="width:10%;">Vendor Name</th> </tr> </table>		Contract item#	Qty	Manufacturer	Brief Description	Model	Serial# (if any)	Vendor Name
Contract item#	Qty	Manufacturer	Brief Description	Model	Serial# (if any)	Vendor Name		
Comments: <div style="text-align: center; margin-top: 50px;"> <div style="border: 1px solid black; padding: 20px; display: inline-block;"> <h1 style="margin: 0;">Sample</h1> </div> </div> <p style="margin-top: 20px;">NOTE: INSPECTION WILL NOT BE PERFORMED AT THE SOURCE. THE R.E. SHOULD INSPECT OR SAMPLE AT THE JOBSITE. ASSISTANCE WILL BE PROVIDED UPON REQUEST.</p>								
CC: 1. Contractor: <div style="text-align: right; margin-top: 20px;">Attn:</div> 2. Vendors Listed	<div style="margin-top: 20px;"> X _____ Inspector: Phone: Fax: Pager: </div>							

DEPARTMENT OF TRANSPORTATION

REQUIRED DETAILED LIST of ELECTRICAL MATERIALS

Contractor: Attn: Fax:	Date: From: State of California Department of Transportation Division of Materials & Foundations Office of Testing & Technology Services Electrical QA Inspection Branch 5900 Folsom Blvd Sacramento, CA 95819- 4612
---	--

District	County	Route	PM
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Contract:

This department has been notified that your company will be furnishing **ELECTRICAL MATERIALS** for the above contract. Please submit a **DETAILED** list of the electrical materials to be supplied. The attached form may be used.

Sample

EXAMPLE:			
<u>Qty</u>	<u>Manufacturer</u>	<u>Material Description and Model</u>	<u>Vendor Name</u>
10	ABC Inc	310W HPS Luminaire, 120/240V, Model 123	DEF Inc

Note that the CEM-3101 (HC-30) did not provide sufficient details. Until we receive your response in the above format, we will not make arrangements for the required inspection, sampling and testing.

CC: Resident Engineer - <div style="text-align: right; margin-right: 20px;"> District: Phone: Fax: </div> Others:	<div style="margin-top: 20px;"> X _____ Inspector: Phone: Fax: Pager: E-mail: </div>
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DEPARTMENT OF TRANSPORTATION

CERTIFICATE OF COMPLIANCE REQUEST

Contractor: Attn: FAX:	Date: From: State of California Department of Transportation Division of Materials and Foundations Office of Testing and Technology Services Electrical QA Inspection Branch 5900 Folsom Blvd Sacramento, CA 95819-4612												
<table style="width:100%; border: none;"> <tr> <td align="center" style="width:25%;">District</td> <td align="center" style="width:25%;">County</td> <td align="center" style="width:25%;">Route</td> <td align="center" style="width:25%;">PM</td> </tr> </table> Contract:		District	County	Route	PM								
District	County	Route	PM										
<table style="width:100%; border: none;"> <tr> <td style="width:10%;">Contract Qnty</td> <td style="width:20%;">Manufacturer</td> <td style="width:30%;">Material</td> <td style="width:20%;">Model</td> <td style="width:20%;">Addn'l Info (if any)</td> <td style="width:10%;">Vendor</td> </tr> <tr> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;"></td> </tr> </table>		Contract Qnty	Manufacturer	Material	Model	Addn'l Info (if any)	Vendor						
Contract Qnty	Manufacturer	Material	Model	Addn'l Info (if any)	Vendor								
Comments: <p>The above materials will be accepted on a Certificate of Compliance (COC) unless the RE requests testing. The COC must be furnished as per Section 6-1.07 of the Standard Specifications and shall be signed by a representative of the company manufacturing the material.</p> <p>Final acceptance will not be given until the certification has been provided. The COC shall be Supplied to the Resident Engineer.</p> <div style="border: 1px solid black; width: 300px; height: 100px; margin: 20px auto; text-align: center; font-size: 48px; font-weight: bold; line-height: 1;"> Sample </div>													
CC: Resident Engineer - District: Phone: Fax: Others -	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"> X </div> Inspector: Phone Fax: Pager: E-mail:												

CERTIFICATE OF COMPLIANCE

for Contract # _____

I certify that the material listed below complies with the material and workmanship requirements of Contract Plans, Special Provisions, Standard Specifications and Standard Plans.

I also certify that I am an official representative for _____, the manufacturer of the material listed below. Furthermore, I certify that where California Test Methods are part of the specifications, that the manufacturer has performed the necessary quality control to substantiate this certification.

Material Description:

Manufacturer: _____

Model: _____

Serial Number (if applicable): _____

Quantity to be supplied: _____

Remarks: _____

Signed by: _____

Printed Name: _____

Title: _____

Company: _____

Date: _____

SAMPLE

Resident Engineer: District Phone: Fax:		Report Date: From: State of California Department of Transportation Division of METS Office of Testing & Technology Services Electrical Testing Branch 5900 Folsom Blvd Sacramento, CA 95819-4612			
Contract:		District	County	Route	PM
Date Material Received:					
Date Testing Completed:		Tested by:			
Manufacturer	Material	Model	Addn'l Info (if any)	Vendor	
Quantity:	Total Units Received:	Units Sample Tested:	Compliant Units:	Non-Compliant Units:	
Material Meets or Does Not Meet Specifications					
Comments: <div>Sample</div>					
CC: Contractor: Attn: FAX: Others: Fax:		Christopher Tan, Chief Electrical Testing Branch By: X Phone: Fax: Pager:			